

**AMENDMENTS TO THE CLAIMS**

- 1     1.     (Currently Amended) A method for marking one or more packets of data in a  
2           packet-switched network based on achieved flow bandwidth information within  
3           the network, comprising the computer-implemented steps of:  
4           marking a first group of one or more packets of a data flow with a first behavioral  
5           treatment value, wherein the first behavioral treatment value directs  
6           devices within the network to treat the first group of one or more packets  
7           with a first quality of service treatment;  
8           determining an achieved flow bandwidth for the data flow based on data traffic  
9           within the network;  
10          determining a second behavioral treatment value based on the achieved flow  
11          bandwidth for the data flow within the network; and  
12          marking a second group of one or more packets of said data flow with said second  
13          behavioral treatment value, wherein the second behavioral treatment value  
14          directs devices within the network to treat the second group of one or more  
15          packets with a second quality of service treatment.
- 1     2.     (Original) The method as recited in Claim 1, wherein:  
2           the step of marking a first group of one or more packets includes the step of  
3           storing a first differentiated services codepoint (DSCP) value in each  
4           header of the first group of one or more packets of a data flow;

5 the step of determining a second behavioral treatment value includes the step of  
6 determining a second DSCP value; and  
7 the step of marking a second group of one or more packets includes the step of  
8 storing the second DSCP value in each header of the second group of one  
9 or more packets of a data flow.

1 3. (Original) The method as recited in Claim 1, further comprising the steps of:  
2 determining packet flow characteristics of the first group of one or more packets  
3 of a data flow; and  
4 determining the second behavioral treatment value based on the available  
5 bandwidth within the network and the packet flow characteristics of the  
6 first group of one or more packets of a data flow.

1 4. (Original) The method as recited in Claim 1, further comprising the steps of:  
2 establishing a Quality of Service (QoS) policy for applying a per-hop-behavior  
3 treatment for forwarding packets within a flow in said network; and  
4 generating the first behavioral treatment value based on the established QoS  
5 policy.

1 5. (Currently Amended) A computer-readable medium carrying one or more  
2 sequences of instructions for marking one or more packets of data in a packet-  
3 switched network based on achieved flow bandwidth information within the  
4 network, wherein execution of the one or more sequences of instructions by one or  
5 more processors causes the one or more processors to perform the steps of:

6 marking a first group of one or more packets of a data flow with a first behavioral  
7 treatment value, wherein the first behavioral treatment value directs  
8 devices within the network to treat the first group of one or more packets  
9 with a first quality of service treatment;  
10 determining an achieved flow bandwidth for the data flow based on data traffic  
11 within the network;  
12 determining a second behavioral treatment value based on the achieved flow  
13 bandwidth for the data flow within the network; and  
14 marking a second group of one or more packets of said data flow with said second  
15 behavioral treatment value, wherein the second behavioral treatment value  
16 directs devices within the network to treat the second group of one or more  
17 packets with a second quality of service treatment.

1 6. (Original) The computer-readable medium as recited in Claim 5, wherein:  
2 the step of marking a first group of one or more packets includes the step of  
3 storing a first differentiated services codepoint (DSCP) value in each  
4 header of the first group of one or more packets of a data flow;  
5 the step of determining a second behavioral treatment value includes the step of  
6 determining a second DSCP value; and  
7 the step of marking a second group of one or more packets includes the step of  
8 storing the second DSCP value in each header of the second group of one  
9 or more packets of a data flow.

1     7.     (Original) The computer-readable medium as recited in Claim 5, further  
2           comprising instructions for performing the steps of:  
3           determining packet flow characteristics of the first group of one or more packets  
4                       of a data flow; and  
5           determining the second behavioral treatment value based on the available  
6                       bandwidth within the network and the packet flow characteristics of the  
7                       first group of one or more packets of a data flow.

1     8.     (Original) The computer-readable medium as recited in Claim 5, further  
2           comprising instructions for performing the steps of:  
3           establishing a Quality of Service (QoS) policy for applying a per-hop-behavior  
4                       treatment for forwarding packets within a flow in said network; and  
5           generating the first behavioral treatment value based on the established QoS  
6                       policy.

1     9.     (Currently Amended) A computer apparatus comprising:  
2           a processor; and  
3           a memory coupled to the processor, the memory containing one or more  
4                       sequences of instructions for marking one or more packets of data in a  
5                       packet-switched network based on achieved flow bandwidth information  
6                       within the network, wherein execution of the one or more sequences of  
7                       instructions by the processor causes the processor to perform the steps of:  
8                       marking a first group of one or more packets of a data flow with a first  
9                       behavioral treatment value, wherein the first behavioral treatment

10 value directs devices within the network to treat the first group of  
11 one or more packets with a first quality of service treatment;  
12 determining an achieved flow bandwidth for the data flow based on data  
13 traffic within the network;  
14 determining a second behavioral treatment value based on the achieved  
15 flow bandwidth for the data flow within the network; and  
16 marking a second group of one or more packets of said data flow with said  
17 second behavioral treatment value, wherein the second behavioral  
18 treatment value directs devices within the network to treat the second  
19 group of one or more packets with a second quality of service  
20 treatment.

1 10. (Original) The computer apparatus as recited in Claim 9, wherein:  
2 the step of marking a first group of one or more packets includes the step of  
3 storing a first differentiated services codepoint (DSCP) value in each  
4 header of the first group of one or more packets of a data flow;  
5 the step of determining a second behavioral treatment value includes the step of  
6 determining a second DSCP value; and  
7 the step of marking a second group of one or more packets includes the step of  
8 storing the second DSCP value in each header of the second group of one  
9 or more packets of a data flow.

1 11. (Original) The computer apparatus as recited in Claim 9, further comprising  
2 instructions for performing the steps of:

3 determining packet flow characteristics of the first group of one or more packets  
4 of a data flow; and  
5 determining the second behavioral treatment value based on the available  
6 bandwidth within the network and the packet flow characteristics of the  
7 first group of one or more packets of a data flow.

1 12. (Original) The computer apparatus as recited in Claim 9, further comprising  
2 instructions for performing the steps of:  
3 establishing a Quality of Service (QoS) policy for applying a per-hop-behavior  
4 treatment for forwarding packets within a flow in said network; and  
5 generating the first behavioral treatment value based on the established QoS  
6 policy.

1 13. (Currently Amended) A network device configured for marking one or more  
2 packets of data in a packet-switched network based on achieved flow bandwidth  
3 information within the network, comprising:  
4 means for marking a first group of one or more packets of a data flow with a first  
5 behavioral treatment value, wherein the first behavioral treatment value  
6 directs devices within the network to treat the first group of one or more  
7 packets with a first quality of service treatment;  
8 means for determining an achieved flow bandwidth for the data flow based on  
9 data traffic within the network;  
10 means for determining a second behavioral treatment value based on the achieved  
11 flow bandwidth for the data flow within the network; and

12 means for marking a second group of one or more packets of said data flow with  
13 said second behavioral treatment value, wherein the second behavioral  
14 treatment value directs devices within the network to treat the second  
15 group of one or more packets with a second quality of service treatment.

1 14. (Currently Amended) A method for marking one or more packets of data in a  
2 packet-switched network based on achieved flow bandwidth information  
3 within the network, comprising the computer-implemented steps of:  
4 causing one or more network devices to mark a first group of one or more  
5 packets of a data flow with a first behavioral treatment value, wherein  
6 the first behavioral treatment value directs devices within the network  
7 to treat the first group of one or more packets with a first quality of  
8 service treatment;  
9 determining an achieved flow bandwidth for the data flow based on data  
10 traffic within the network;  
11 determining a second behavioral treatment value based on the achieved flow  
12 bandwidth for the data flow within the network; and  
13 causing one or more network devices to mark a second group of one or more  
14 packets of said data flow with said second behavioral treatment value,  
15 wherein the second behavioral treatment value directs devices within  
16 the network to treat the second group of one or more packets with a  
17 second quality of service treatment.

- 1    15.    (Previously Presented) The method as in claim 1, wherein the first behavioral  
2           treatment is determined without regard to the achieved flow bandwidth.
- 1    16.    (Previously Presented) The method as in claim 1, wherein the second behavioral  
2           treatment is a behavioral treatment that provides a lower level of service than  
3           other available choices of behavioral treatments; and  
4           wherein the second behavioral treatment provides a high enough level of service  
5           to accommodate the achieved flow bandwidth.
- 1    17.    (Previously Presented) The method as in claim 1, wherein the second behavioral  
2           treatment is a behavioral treatment that provides a minimum level of service that  
3           is a sufficient level of service to accommodate the achieved flow bandwidth.
- 1    18.    (Previously Presented) The method as in claim 1, wherein the step of marking the  
2           first group is performed by at least communicating the first behavioral treatment  
3           to a differentiated services node located at a border of a differentiated services  
4           domain; and  
5           wherein the step of marking the second group is performed by at least  
6           communicating the second behavioral treatment to the differentiated  
7           services node.
- 1    19.    (Previously Presented) A method as in claim 1, further comprising repeating the  
2           step of determining the achieved flow bandwidth and steps that follow the step of  
3           determining the achieved flow bandwidth.



1 20. (Previously Presented) A method as in claim 1, further comprising repeating the  
2 step of determining the achieved flow bandwidth and steps that follow the step of  
3 determining the achieved flow bandwidth multiple times, therein enhancing  
4 efficiency of the network on an on going basis.

1 21. (Previously Presented) The method as in claim 1, wherein the step of determining  
2 the achieved flow bandwidth is performed by at least estimating the achieved flow  
3 bandwidth based on Management Information Base (MIB) variables.

1 22. (Previously Presented) The method as in claim 1, wherein the step of determining  
2 the achieved flow bandwidth is performed by at least checking a Transfer Control  
3 Protocol/ Internet Protocol (TCP/IP) window size and determining a value for the  
4 achieved flow bandwidth based on the TCP/IP window size.

1 23. (Previously Presented) The method as in claim 1, wherein the step of determining  
2 the achieved flow bandwidth is based on reception quality feedback from a Real-  
3 Time Transport Protocol (RTP) receiver.

1 24. (Previously Presented) A method for marking one or more packets of data in a  
2 packet-switched network based on achieved flow bandwidth information within  
3 the network, comprising the computer-implemented steps of:  
4 marking a first group of packets of a plurality of data flows with an initial set of  
5 behavioral treatment values, wherein the first set of behavioral treatment  
6 values direct devices within the network to treat the first group packets  
7 with an initial set of quality of service treatments;

determining achieved flow bandwidths, wherein an achieved flow bandwidth is  
determined for each of the plurality of data flows based on data traffic  
within the network;  
determining an updated set of behavioral treatment values based on the achieved  
flow bandwidths within the network; and  
after the steps of marking the first group and determining the updated set of  
behavioral treatment values, marking a second group packets of said  
plurality of data flows with said updated set of behavioral treatment  
values, wherein the updated set of behavioral treatment values direct  
devices within the network to treat the second group of packets with an  
updated set of quality of service treatments.

25. (Previously Presented) A method for performing packet marking comprising the  
computer-implemented steps of:  
defining an initial set of Quality of Service (QoS) values for coloring packets  
within a plurality of data flows, wherein each of the QoS values indicates  
an allocation of bandwidth;  
coloring a first group of one or more packets of a given data flow selected from  
the plurality of data flows, without regard to an achieved flow bandwidth,  
by at least  
communicating the initial set of QoS values to each of one or more edge  
differentiated services domain nodes that are located at one or  
more edges of a differentiated services domain, and

the one or more edge differentiated services domain nodes using one or  
more of the initial set of QoS values to color the first group;  
estimating traffic bandwidth within the network based on bandwidth information  
corresponding to a current traffic pattern of the network, wherein the  
traffic bandwidth estimated includes an achieved flow bandwidth for the  
given data flow;  
determining an updated set of QoS values for coloring packets within the plurality  
of data flows, based on the traffic bandwidth estimated,  
wherein the updated set of QoS values provide lower levels of service than  
other available choices of QoS values, and  
wherein the updated set of QoS values provide a high enough level of  
service to accommodate the traffic bandwidth estimated;  
coloring a subsequent group of one or more packets of the given data flow with  
the one or more of updated set of QoS values by at least  
communicating the updated set of QoS values to each of one or more edge  
differentiated services domain nodes, and  
the one or more edge differentiated services domain nodes using one or  
more of the updated set of QoS values to color the subsequent  
group;  
repeating the steps of estimating traffic bandwidth, determining an updated set of  
QoS values, and coloring a subsequent group multiple time, therein tuning  
the network on an ongoing basis.

1 26. (Previously Presented) The method as in claim 24, wherein the initial set of QoS  
2 values is an initial set of Differentiated Services Codepoint (DSCP) values;  
3 wherein the updated set of QoS values is an updated set of DSCP values;  
4 wherein the step of estimating traffic bandwidth further comprises the steps of:  
5 defining one or more QoS policies that specify target bandwidth values  
6 and a range of possible services for each the plurality of data  
7 flows, wherein a given target bandwidth value is specified for the  
8 given data flow, and wherein the given target bandwidth identifies  
9 a specific bandwidth that is desirous or required by the given data  
10 flow;  
11 gathering information about the traffic bandwidth; and  
12 determining the traffic bandwidth based on the information gathered.

1 27. (Previously Presented) The method of claim 1, wherein the data flow is  
2 associated with only one behavioral treatment at any given time.

1 28. (Previously Presented) The method of claim 24, wherein each data flow is  
2 associated with only one behavioral treatment at any given time.

1 29. (Currently Amended) The method of claim 1, wherein the achieved flow  
2 bandwidth is a percentage of the network bandwidth.

1 30. (Previously Presented) The method claim 29, wherein the second behavioral  
2 treatment results in the dataflow having a different achieved flow bandwidth,  
3 which is a different percentage of the network bandwidth.

- 1    31.    (Previously Presented) The method of claim 1, wherein the determining of the  
2           second behavioral treatment is in response to a determination of achieved flow  
3           bandwidth resulting from the determining of the achieved flow bandwidth.
- 1    32.    (Previously Presented) The computer-readable medium as in claim 5, wherein the  
2           first behavioral treatment is determined without regard to the achieved flow  
3           bandwidth.
- 1    33.    (Previously Presented) The computer-readable medium as in claim 5, wherein the  
2           second behavioral treatment is a behavioral treatment that provides a lower level  
3           of service than other available choices of behavioral treatments; and  
4           wherein the second behavioral treatment provides a high enough level of service  
5           to accommodate the achieved flow bandwidth.
- 1    34.    (Previously Presented) The computer-readable medium as in claim 5, wherein the  
2           second behavioral treatment is a behavioral treatment that provides a minimum  
3           level of service that is a sufficient level of service to accommodate the achieved  
4           flow bandwidth.
- 1    35.    (Previously Presented) The computer-readable medium as in claim 5, wherein the  
2           step of marking the first group is performed by at least communicating the first  
3           behavioral treatment to a differentiated services node located at a border of a  
4           differentiated services domain; and

5 wherein the step of marking the second group is performed by at least

6 communicating the second behavioral treatment to the differentiated

7 services node.

1 36. (Previously Presented) A computer-readable medium as in claim 5, wherein the  
2 method further comprises repeating the step of determining the achieved flow  
3 bandwidth and steps that follow the step of determining the achieved flow  
4 bandwidth.

1 37. (Previously Presented) A computer-readable medium as in claim 5, wherein the  
2 method further comprises repeating the step of determining the achieved flow  
3 bandwidth and steps that follow the step of determining the achieved flow  
4 bandwidth multiple times, therein enhancing efficiency of the network on an on  
5 going basis.

1 38. (Previously Presented) The computer-readable medium as in claim 5, wherein the  
2 step of determining the achieved flow bandwidth is performed by at least  
3 estimating the achieved flow bandwidth based on Management Information Base  
4 (MIB) variables.

1 39. (Previously Presented) The computer-readable medium as in claim 5, wherein the  
2 step of determining the achieved flow bandwidth is performed by at least  
3 checking a Transfer Control Protocol/ Internet Protocol (TCP/IP) window size  
4 and determining a value for the achieved flow bandwidth based on the TCP/IP  
5 window size.

1 40. (Previously Presented) The computer-readable medium as in claim 5, wherein the  
2 step of determining the achieved flow bandwidth is based on reception quality  
3 feedback from a Real-Time Transport Protocol (RTP) receiver.

1 41. (Previously Presented) A computer-readable medium carrying one or more  
2 sequences of instructions for marking one or more packets of data in a packet-  
3 switched network based on achieved flow bandwidth information within the  
4 network, wherein execution of the one or more sequences of instructions by one or  
5 more processors causes the one or more processors to perform the method  
6 comprising:

7 marking a first group of packets of a plurality of data flows with an initial set of  
8 behavioral treatment values, wherein the first set of behavioral treatment  
9 values direct devices within the network to treat the first group packets  
10 with an initial set of quality of service treatments;

11 determining achieved flow bandwidths, wherein an achieved flow bandwidth is  
12 determined for each of the plurality of data flows based on data traffic  
13 within the network;

14 determining an updated set of behavioral treatment values based on the achieved  
15 flow bandwidths within the network; and

16 after the steps of marking the first group and determining the updated set of  
17 behavioral treatment values, marking a second group packets of said  
18 plurality of data flows with said updated set of behavioral treatment  
19 values, wherein the updated set of behavioral treatment values direct

20 devices within the network to treat the second group of packets with an  
21 updated set of quality of service treatments.

1 42. (Previously Presented) A computer-readable medium carrying one or more  
2 sequences of instructions for marking one or more packets of data in a packet-  
3 switched network based on achieved flow bandwidth information within the  
4 network, wherein execution of the one or more sequences of instructions by one  
5 or more processors causes the one or more processors to perform the method  
6 comprising:  
7 defining an initial set of Quality of Service (QoS) values for coloring packets  
8 within a plurality of data flows, wherein each of the QoS values indicates  
9 an allocation of bandwidth;  
10 coloring a first group of one or more packets of a given data flow selected from  
11 the plurality of data flows, without regard to an achieved flow bandwidth,  
12 by at least  
13 communicating the initial set of QoS values to each of one or more edge  
14 differentiated services domain nodes that are located at one or  
15 more edges of a differentiated services domain, and  
16 the one or more edge differentiated services domain nodes using one or  
17 more of the initial set of QoS values to color the first group;  
18 estimating traffic bandwidth within the network based on bandwidth information  
19 corresponding to a current traffic pattern of the network, wherein the  
20 traffic bandwidth estimated includes an achieved flow bandwidth for the  
21 given data flow;



22 determining an updated set of QoS values for coloring packets within the plurality  
23 of data flows, based on the traffic bandwidth estimated,  
24 wherein the updated set of QoS values provide lower levels of service than  
25 other available choices of QoS values, and  
26 wherein the updated set of QoS values provide a high enough level of  
27 service to accommodate the traffic bandwidth estimated;  
28 coloring a subsequent group of one or more packets of the given data flow with  
29 the one or more of updated set of QoS values by at least  
30 communicating the updated set of QoS values to each of one or more edge  
31 differentiated services domain nodes, and  
32 the one or more edge differentiated services domain nodes using one or  
33 more of the updated set of QoS values to color the subsequent  
34 group;  
35 repeating the steps of estimating traffic bandwidth, determining an updated set of  
36 QoS values, and coloring a subsequent group multiple time, therein tuning  
37 the network on an ongoing basis.

- 1 43. (Previously Presented) The computer-readable medium as in claim 41, wherein  
2 the initial set of QoS values is an initial set of Differentiated Services Codepoint  
3 (DSCP) values;  
4 wherein the updated set of QoS values is an updated set of DSCP values;  
5 wherein the step of estimating traffic bandwidth further comprises the steps of:  
6 defining one or more QoS policies that specify target bandwidth values  
7 and a range of possible services for each the plurality of data

flows, wherein a given target bandwidth value is specified for the  
given data flow, and wherein the given target bandwidth identifies  
a specific bandwidth that is desirous or required by the given data  
flow;

gathering information about the traffic bandwidth; and

determining the traffic bandwidth based on the information gathered.

44. (Previously Presented) The computer-readable medium of claim 5, wherein the  
data flow is associated with only one behavioral treatment at any given time.

45. (Previously Presented) The computer readable medium of claim 41, wherein each  
data flow is associated with only one behavioral treatment at any given time.

46. (Previously Presented) The computer-readable medium of claim 5, wherein the  
achieved flow bandwidth is a percentage of the network bandwidth

47. (Previously Presented) The computer-readable medium claim 46, wherein the  
second behavioral treatment results in the dataflow having a different achieved  
flow bandwidth, which is a different percentage of the network bandwidth.

48. (Previously Presented) The computer-readable medium of claim 5, wherein the  
determining of the second behavioral treatment is in response to a determination  
of achieved flow bandwidth resulting from the determining of the achieved flow  
bandwidth.

1 49. (Previously Presented) The computer apparatus as in claim 9, wherein the first  
2 behavioral treatment is determined without regard to the achieved flow  
3 bandwidth.

1 50. (Previously Presented) The computer apparatus as in claim 9, wherein the second  
2 behavioral treatment is a behavioral treatment that provides a lower level of  
3 service than other available choices of behavioral treatments; and  
4 wherein the second behavioral treatment provides a high enough level of service  
5 to accommodate the achieved flow bandwidth.

1 51. (Previously Presented) The computer apparatus as in claim 9, wherein the second  
2 behavioral treatment is a behavioral treatment that provides a minimum level of  
3 service that is a sufficient level of service to accommodate the achieved flow  
4 bandwidth.

1 52. (Previously Presented) The computer apparatus as in claim 9, wherein the step of  
2 marking the first group is performed by at least communicating the first  
3 behavioral treatment to a differentiated services node located at a border of a  
4 differentiated services domain; and  
5 wherein the step of marking the second group is performed by at least  
6 communicating the second behavioral treatment to the differentiated  
7 services node.

1 53. (Previously Presented) A computer apparatus as in claim 9, wherein the method  
2 further comprises repeating the step of determining the achieved flow bandwidth  
3 and steps that follow the step of determining the achieved flow bandwidth.

1 54. (Previously Presented) A computer apparatus as in claim 9, wherein the method  
2 further comprises repeating the step of determining the achieved flow bandwidth  
3 and steps that follow the step of determining the achieved flow bandwidth  
4 multiple times, therein enhancing efficiency of the network on an on going basis.

1 55. (Previously Presented) The computer apparatus as in claim 9, wherein the step of  
2 determining the achieved flow bandwidth is performed by at least estimating the  
3 achieved flow bandwidth based on Management Information Base (MIB)  
4 variables.

1 56. (Previously Presented) The computer apparatus as in claim 9, wherein the step of  
2 determining the achieved flow bandwidth is performed by at least checking a  
3 Transfer Control Protocol/ Internet Protocol (TCP/IP) window size and  
4 determining a value for the achieved flow bandwidth based on the TCP/IP  
5 window size.

1 57. (Previously Presented) The computer apparatus as in claim 9, wherein the step of  
2 determining the achieved flow bandwidth is based on reception quality feedback  
3 from a Real-Time Transport Protocol (RTP) receiver.

1 58. (Previously Presented) A computer apparatus comprising:  
2 a processor; and

3 a memory coupled to the processor, the memory containing one or more  
4 sequences of instructions for marking one or more packets of data in a  
5 packet-switched network based on achieved flow bandwidth information  
6 within the network, wherein execution of the one or more sequences of  
7 instructions by the processor causes the processor to perform the method  
8 including at least:  
9 marking a first group of packets of a plurality of data flows with an initial set of  
10 behavioral treatment values, wherein the first set of behavioral treatment  
11 values direct devices within the network to treat the first group packets  
12 with an initial set of quality of service treatments;  
13 determining achieved flow bandwidths, wherein an achieved flow bandwidth is  
14 determined for each of the plurality of data flows based on data traffic  
15 within the network;  
16 determining an updated set of behavioral treatment values based on the achieved  
17 flow bandwidths within the network; and  
18 after the steps of marking the first group and determining the updated set of  
19 behavioral treatment values, marking a second group packets of said  
20 plurality of data flows with said updated set of behavioral treatment  
21 values, wherein the updated set of behavioral treatment values direct  
22 devices within the network to treat the second group of packets with an  
23 updated set of quality of service treatments.

1 59. (Previously Presented) A computer apparatus comprising:  
2 a processor; and

3 a memory coupled to the processor, the memory containing one or more  
4 sequences of instructions for marking one or more packets of data in a  
5 packet-switched network based on achieved flow bandwidth information  
6 within the network, wherein execution of the one or more sequences of  
7 instructions by the processor causes the processor to perform the method  
8 including at least:  
9 defining an initial set of Quality of Service (QoS) values for coloring packets  
10 within a plurality of data flows, wherein each of the QoS values indicates  
11 an allocation of bandwidth;  
12 coloring a first group of one or more packets of a given data flow selected from  
13 the plurality of data flows, without regard to an achieved flow bandwidth,  
14 by at least  
15 communicating the initial set of QoS values to each of one or more edge  
16 differentiated services domain nodes that are located at one or more edges  
17 of a differentiated services domain, and  
18 the one or more edge differentiated services domain nodes using one or more of  
19 the initial set of QoS values to color the first group;  
20 estimating traffic bandwidth within the network based on bandwidth information  
21 corresponding to a current traffic pattern of the network, wherein the  
22 traffic bandwidth estimated includes an achieved flow bandwidth for the  
23 given data flow;  
24 determining an updated set of QoS values for coloring packets within the plurality  
25 of data flows, based on the traffic bandwidth estimated,

26 wherein the updated set of QoS values provide lower levels of service than other  
27 available choices of QoS values, and  
28 wherein the updated set of QoS values provide a high enough level of service to  
29 accommodate the traffic bandwidth estimated;  
30 coloring a subsequent group of one or more packets of the given data flow with  
31 the one or more of updated set of QoS values by at least  
32 communicating the updated set of QoS values to each of one or more edge  
33 differentiated services domain nodes, and  
34 the one or more edge differentiated services domain nodes using one or more of  
35 the updated set of QoS values to color the subsequent group;  
36 repeating the steps of estimating traffic bandwidth, determining an updated set of  
37 QoS values, and coloring a subsequent group multiple time, therein tuning  
38 the network on an ongoing basis.

- 1 60. (Previously Presented) The computer apparatus as in claim 58, wherein the initial  
2 set of QoS values is an initial set of Differentiated Services Codepoint (DSCP)  
3 values;  
4 wherein the updated set of QoS values is an updated set of DSCP values;  
5 wherein the step of estimating traffic bandwidth further comprises the steps of:  
6 defining one or more QoS policies that specify target bandwidth values  
7 and a range of possible services for each the plurality of data  
8 flows, wherein a given target bandwidth value is specified for the  
9 given data flow, and wherein the given target bandwidth identifies

10                   a specific bandwidth that is desirous or required by the given data  
11                   flow;  
12                   gathering information about the traffic bandwidth; and  
13                   determining the traffic bandwidth based on the information gathered.

1    61.   (Previously Presented) The computer apparatus of claim 9, wherein the data flow  
2           is associated with only one behavioral treatment at any given time.

1    62.   (Previously Presented) The computer apparatus of claim 58, wherein each data  
2           flow is associated with only one behavioral treatment at any given time.

1    63.   (Previously Presented) The computer apparatus of claim 9, wherein the achieved  
2           flow bandwidth is a percentage of the network bandwidth

1    64.   (Previously Presented) The computer apparatus claim 63, wherein the second  
2           behavioral treatment results in the dataflow having a different achieved flow  
3           bandwidth, which is a different percentage of the network bandwidth.

1    65.   (Previously Presented) The computer apparatus of claim 9, wherein the  
2           determining of the second behavioral treatment is in response to a determination  
3           of achieved flow bandwidth resulting from the determining of the achieved flow  
4           bandwidth.